Doon Public School Bhuj

Sub - Robotics

Class: VI

Date: 04/05/2020

Ohm's Law and LED Basics

Revision

- **Electronics** is a field of science in which we study about electric currents generated due to the movement of electric charges.
- A circuit made of electronic components and wires is known as an **electronic circuit**.
- **Voltage** is nothing but a type of pressure difference that a power source creates at its two ends. This difference makes the charge flow around the circuit.
- **Battery** is the power source of the circuit which provide voltage.

Revision

- We measure the voltage using a device known as a **voltmeter.**
- The rate of flow of charge is defined as **current**.
- The property of any material to resist the flow of charge is called **resistance**.
- More the resistance, slower the flow i.e. lesser the current.
- A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element.
- **Polarity** is the property of having two poles that have opposite physical properties:
  - Positive
  - Negative

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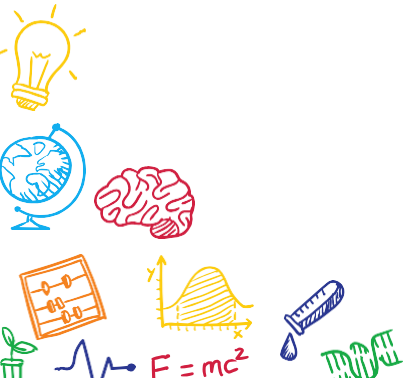
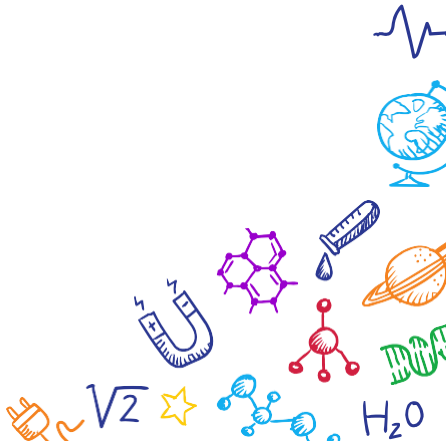
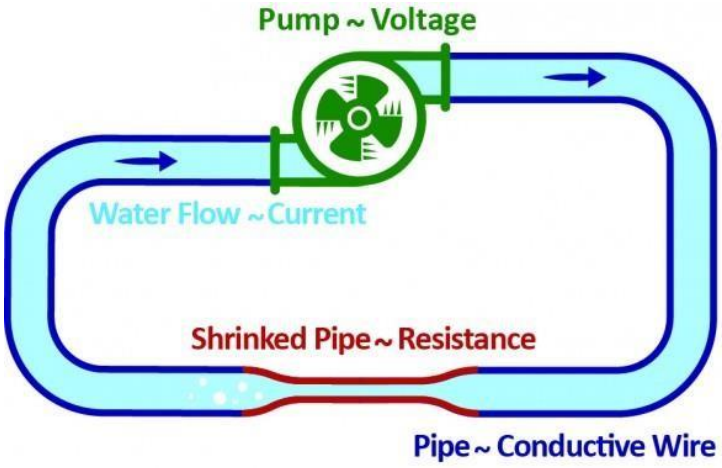
Ohm's Law





Relation between Voltage and Current

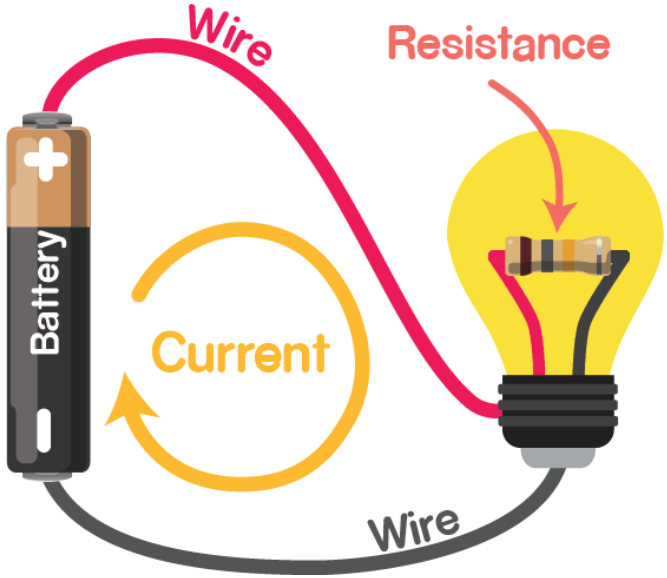
- When **pressure** applied by the pump increases the rate of flow of water molecules also increases, when the length and thickness of the pipe is the same.
- Similarly, in an electronic circuit, the current increases with an increase in voltage, and decreases as the voltage decreases.



Ohm’s Law

- The law suggests that current increases when the voltage increases or when the resistance decreases, it is mathematically expressed as

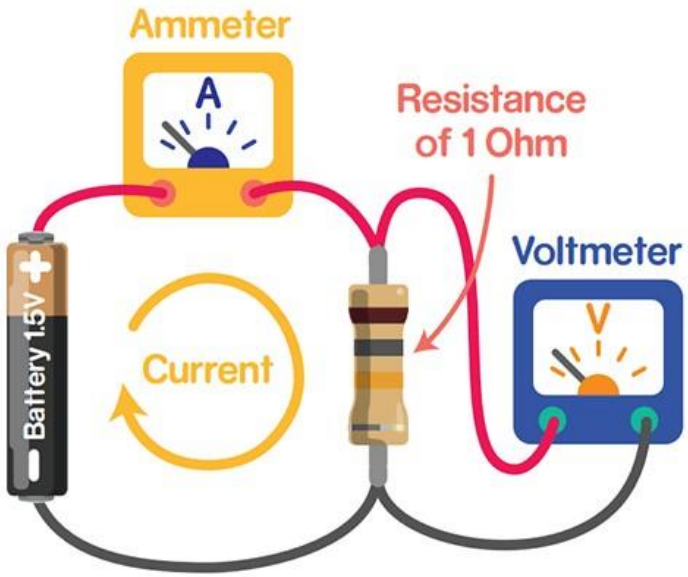
$$V=IR$$



Ohm's Law

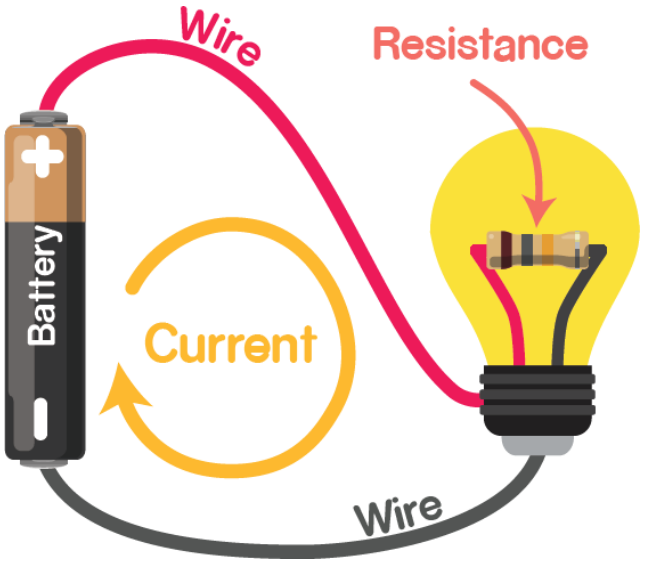
- If battery's voltage is 1V and resistance of circuit is 1Ω, then the current flowing in the circuit will be 1A, and the relation between these units is expressed as

$$1V = 1A * 1\Omega$$



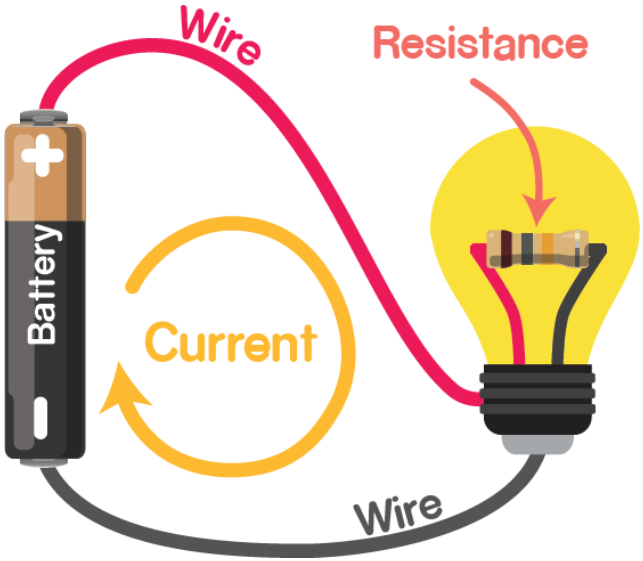
Using Ohm's Law

- Suppose you have a simple circuit with a battery of **9V** and a resistor. The current in the circuit is **3A**.
- What is the resistance?



Using Ohm's Law

- Suppose you have a simple circuit with a battery of **9V** and a resistor. The current in the circuit is **3A**.
- R =
- R = 9/3 = 3Ω



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